Exemption No. 11158

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

In the matter of the petition of **TEAM 5, LLC** for an exemption from §§ 61.113(a) and (b); 91.103; 91.119(c); 91.121; 91.151(a); 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–2014–0783**

GRANT OF EXEMPTION

By letter dated September 29, 2014, Mr. Alan D. Purwin, Managing Member, Team 5, LLC, (Team 5) 16303 Waterman Drive, Van Nuys, California 91406, petitioned the Federal Aviation Administration (FAA) for an exemption from §§ 61.113(a) and (b), 91.103, 91.119(c), 91.121, 91.151(a), 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) of Title 14, Code of Federal Regulations (14 CFR). The exemption would allow Team 5 to operate the Gryphon Dynamics X8 with eight rotors and eight motors in a coaxial quadcopter configuration or the DJI S1000 with eight rotors and eight motors in an octocopter configuration as its unmanned aircraft systems (UAS) for aerial filming in the motion picture and television industry.

The petitioner requests relief from the following regulations:

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 91.103 prescribes that each PIC shall, before beginning a flight, become familiar with all available information concerning that flight. This information must 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 91.119(c) prescribes that, except when necessary for takeoff or landing, no person may operate an aircraft below the following altitudes:

(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.

Section 91.121 prescribes, in pertinent part, 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.

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 91.405(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 14 CFR 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 months, it has had an inspection for the issuance of an airworthiness certificate in accordance with 14 CFR part 21, Certification Procedures for Products and Parts.

Section 91.417(a) and (b) prescribes, 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 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) Team 5 Flight Operations and Procedures Manual (FOPM),
2) Team 5 Motion Picture and Television Operations Manual (MPTOM), and
3) Additional supplemental documents submitted by petitioner

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) public interest.

<u>Unmanned Aircraft System (UAS)</u>

The two UAS proposed by the petitioner are of propriety design, conceived and constructed by the petitioner: a Gryphon Dynamics X8 Serial No. 001 and a DJI S1000, Serial No. 001. The petitioner states each UAS is less than 55 pounds including payload, flies at a speed of no more than 50 knots, carries neither a pilot nor a passenger, carries no combustible fuels, and operates over private or controlled access areas defined as "sterile areas" in Team 5's operating documents, which requires the establishment of a "security perimeter" for each flight operations

area. The petitioner adds that if either UAS loses communications or its Global Positioning System (GPS) signal, it will have the capability to return to a predetermined location within the security perimeter and land. The petitioner adds that each UAS will have the capability to abort a flight in case of unpredicted obstacles, weather, or emergencies. The petitioner states the requested exemption would provide greater safety in connection with aircraft operations in the film and television industry as established by the exemptions already granted by the FAA under Section 333 of the FAA Modernization and Reform Act.

The petitioner requests an exemption from the maintenance, preventative maintenance, and alterations requirements in part 91, Subpart E (§§ 91.405 through 91.417). The petitioner notes the maintenance requirements in §§ 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b) only apply to aircraft with an airworthiness certificate. The petitioner states the operator will accomplish any maintenance including preflight maintenance, and will keep a log of any performed maintenance in accordance with their operating documents. The petitioner adds the operator is most familiar with the UAS and best suited to maintain it in an airworthy condition. The petitioner states that if a mechanical issue arises, the unmanned aircraft (UA) can land immediately and will be operating from no higher than 400 feet above ground level (AGL).

UAS Pilot In Command (PIC)

The petitioner states each UAS at minimum will have a crew for each operation consisting of the UAS pilot, a visual observer (VO), and the camera operator. The UAS pilot will be the PIC and if an appropriately qualified pilot certificate holder other than the UAS pilot is on the set, that pilot can be designated as PIC. The petitioner asserts that because the UAS will not carry a pilot or passengers, the proposed operations can achieve an equivalent level of safety by requiring the PIC to have a private pilot's certificate and third-class airman medical certificate rather than a commercial pilot certificate to operate the UAS. The petitioner notes the pilot and observer must be trained in UAS operations and receive current information on the particular UAS to be operated as required by the operating documents.

The petitioner states 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 a UAS are so diminished from the level of risk associated with commercial operations contemplated by part 61, *Certification: Pilots, Flight Instructors, and Ground Instructors*, when drafted, that allowing operations of the UAS with a private pilot as the PIC, as requested, exceeds the current level of safety achieved by § 61.113(a) and (b).

UAS Operating Parameters

The petitioner states the aircraft will be operated with a UAS pilot and VO, within line of sight, and notes the pilot and VO will be able to communicate by voice, radio, and/or text at all times. The petitioner states that the UAS flights will be limited to a maximum altitude of 400 feet AGL and not more than 200 feet above an elevated platform from which filming is planned. The petitioner asserts an equivalent level of safety can be achieved given the size, weight, and speed

of the UAS, as well as the location where it is operated. In addition, low altitude operation of the UAS will ensure separation between UAS and conventional aircraft.

The petitioner adds the operator will obtain the consent of all persons involved in the filming and ensure only consenting persons will be allowed within 100 feet of the flight operation. The petitioner notes that radius may be reduced to 30 feet based on an equivalent level of safety determination, as required in the operating documents, and operations at a closer range may be approved with the advance permission of the appropriate flight standards district office (FSDO). The petitioner states it will obtain written and/or oral permission from affected property holders and any required permissions and permits will be obtained from appropriate governmental agencies. The petitioner states all flights will occur in accordance with any state and local laws regarding privacy.

Regarding preflight actions, the petitioner requests an exemption from § 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 commencing flight. Additionally, the petitioner notes that a briefing will be conducted before each day's production activities and attendance is mandatory for all personnel performing duties within the boundaries of the safety perimeter. Further, the petitioner states it will submit a written plan of activities to the appropriate FSDO 3 days before the proposed filming as required in the operating documents.

Regarding the petitioner's requested relief from 14 CFR § 91.119(c) *Minimum safe altitudes,* the petitioner states that because it requests authority to operate at altitudes only up to 400 AGL, and not more than 200 above an elevated platform from which filming is planned, an exemption is needed to allow such operations. Except for the limited conditions stated in the operating documents the UA will never operate higher than 400 AGL. It will, however, be operated in a restricted area within a security perimeter, where buildings and people will not be exposed to operations without their pre-obtained consent.

The petitioner asserts an equivalent level of safety will be achieved given the size, weight, and speed of the UAS as well as the location where it is operated. No flight will be taken without the permission of property owners or local officials. Because of the advance notice to the property owners and participants in the filming activity, all affected individuals will be informed of the planned flight operations. The petitioner states that compared to flight operations for manned aircraft and the lack of flammable fuel, any risk associated with the proposed UAS operations is far less than conventional aircraft operating at or below 500 AGL. In addition, the low-altitude operations of the UAS will ensure separation between a UAS and conventional aircraft.

The petitioner also requests an exemption from § 91.121, as its UAS may have a GPS altitude readout instead of a barometric altimeter. The petitioner states the operator will achieve an equivalent level of safety via the operating documents and safety checklist by confirming the altitude of the launch site shown on the GPS altitude indicator before flight.

Regarding the fuel requirements, the petitioner states that to meet the 30-minute reserve requirements in § 91.151, UAS flights would have to be limited to approximately 10 minutes. The petitioner argues that given the limitations on the UAS's proposed flight area and the location of its proposed operations within a predetermined area, a longer timeframe for flight in daylight VFR conditions is reasonable. The petitioner believes an equivalent level of safety can be achieved by limiting flights to 30 minutes or not less than 25 percent of battery power, whichever occurs first. The petitioner notes it is not seeking an exemption for night operations.

Public Interest

The petitioner states that granting the requested exemptions is in the public interest because of the strong equivalent level of safety surrounding the proposed operations and the significant public benefit, including enhanced safety and reduction in environmental impacts, specifically reduced emissions and noise.

Discussion of Public Comments:

A summary of the petition was published in the Federal Register on October 28, 2014 (79 FR 64244). The FAA received seven comments on the petition for exemption; three commenters supported the exemption request and four opposed it.

Two commenters in support of the exemption state petitioner's operations are safe, professional, and efficient, and cite petitioner's expertise in aerial filming, specifically regarding safety and environmental impacts.

In support of the petition, the Small UAV Coalition (Coalition) states the petitioner has proposed to abide by stronger safety measures than hobby and modeler groups operating similar aircraft. The Coalition states that it does not believe that heightened safety measures should be required for the petitioner simply because of the commercial nature of its operations. The Coalition urged the FAA to adopt an evaluation framework for UAS operations under section 333 of Pub. L. 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 based on commercial and noncommercial operations. The Coalition suggested FAA safety regulations be proportionate to the risks posed by the particular proposed UAS operations by distinguishing between UAS. The petitioner's UAS pose considerably less safety risk than larger UAS used for defense and aerospace purposes. The Coalition asserted that because UAS operations like the petitioner's pose minimal risk to safety, they should be subject to minimal and appropriate regulations.

The Coalition noted the FAA is to consider the seven factors[1] in section 333 as a minimum. The Coalition stated the petition shows the FAA should consider factors other than those specified in

[1] Section 333(b) of P.L. 112-95 states, in part: "In making the determination under subsection (a), the Secretary shall determine, at a minimum-- (1) which types of unmanned aircraft systems, if any, as a result of their size, weight, speed, operational capability, proximity to airports and populated areas, and operation within visual line of sight do not create a hazard to users of the national airspace system or the public or pose a threat to national security; …"

section 333, such as location, altitude of its UAS, and pilot training and experience. The Coalition maintained that the petitioner's proposed operations satisfy the seven factors in section 333 and include several additional mitigating factors to ensure the safety and security of the proposed UAS operations. The Coalition emphasized the FAA must evaluate each factor within the context of the petitioner's proposed UAS operations.

The Coalition also commented that the FAA should grant relief from the requirement to hold an airman's certificate, but stated that at a minimum the FAA should provide an exception from part 61 and approve training and testing regiments that pertain to UAS commercial operations pertinent to the aircraft and operation proposed. The Coalition also asserted that Congress intended the section 333 national security criterion to focus on the operation rather than on the pilot and that shifting that focus imposes an unnecessary burden.

In response, as discussed in the grant of exemption to Trimble Navigation Ltd. (No. 11110), neither section 333 nor the FAA's authority to exempt from its regulations found in 49 USC 44701(f), authorizes the FAA to provide exemption to the statutory requirement to hold an airman certificate as prescribed in 49 USC § 44711. The FAA notes that under this exemption the petitioner proposed to use pilots holding private certificates and it will be able to use the training program it proposed. Finally, the FAA does not agree that relying on the pilot certificate for a national security finding poses an unnecessary burden because pilots under this exemption, and the exemptions granted previously to section 333 requests, are already required to hold a pilot certificate to satisfy 29 USC 44711.

The Coalition commented that a visual observer (VO) should not be required for all small UAS operation. The Coalition further asserted that the presence of one or more VOs may allow the UAS to be operated beyond VLOS of the PIC and that the petitioner's proposal to operate the UA within VLOS of the PIC *and/or* VO should be permitted. The FAA notes that one of the determinations for operations under section 333 is operation within visual line of sight. As the PIC is determined to be in command of the UA, he must maintain VLOS while operating the UA. The FAA also notes that a visual observer complements the PICs capability to see and avoid other aircraft, including when the PIC may be momentarily attending to other flying tasks (e.g., maneuvering the aircraft close to actors and actresses and other objects on a film set). The VO provides an additional level of operational safety.

The FAA received comments opposing the petition from two individuals, the Air Line Pilots Association, International (ALPA), and the National Agricultural Aviation Association (NAAA). One of the two individual commenters states the exemption does not serve the public interest.

ALPA expresses concern regarding several aspects of the petition. ALPA notes the petitioner's reference to operations conducted within "limited or predetermined" sterile areas is not defined, nor does the petitioner detail procedures for controlling the airspace or area of operation. Specifically, ALPA states "there must be means both to ensure that the sUAS remains within the defined airspace and to ensure that the hazard of other aircraft intruding on the operation is mitigated." The FAA believes the limitations under which the petitioner will operate (i.e.

VLOS and at or below 400 feet AGL) are sufficient mitigations to this risk so that the operations will not adversely affect safety.

Regarding the petitioner's statement that the PIC and observer will be able to communicate by voice or text, ALPA notes that text messaging could have an unknown latency extending to several minutes. ALPA also states that the pilot and observer should be able to maintain a visual observation of the aircraft and area of operation when using voice communication. NAAA states UAS observers must be present and able to communicate with the operator from the most minimal distance possible. The FAA has inserted a condition regarding PIC and visual observer communications.

ALPA asserts the UAS's lithium polymer batteries have numerous associated fire and explosion hazards as outlined in DOT/FAA/AR-09/55, "Flammability Assessment of Lithium-Ion and Lithium-Ion Polymer Battery Cell Designed for Aircraft Power Usage (January 2010)," and that the safe carriage of the batteries and the mitigations in place for known risks should be addressed. The referenced study was primarily conducted to determine how certain battery cells react in a fire situation aboard manned airplanes. Given the size of the battery and the operating conditions of the UAS, the FAA concludes that the use of a lithium polymer battery will not pose an undue safety risk for the proposed operations.

ALPA comments that command and control (C2) link failures are one of the most common failures on a UAS, and that lost link mitigations should require safe modes to prevent fly-aways or other scenarios. The FAA agrees and carefully examined the proposed operation to ensure that the vehicle design and the petitioner's operating documents addressed potential hazards related to C2 failure. The FAA finds that the UAS to be operated by the petitioner has sufficient design features to address these hazards. The FAA also finds that the operating documents have incorporated safety procedures to be followed by all operational participants should a C2 failure occur. Further detail is contained in the analysis of the UAS below.

Although the petitioner did not request an exemption from part 21, § 91.7, or § 91.203, ALPA states the UAS should be certified to the same level of safety under part 21 and § 91.203 as other commercially operated aircraft in the National Airspace System (NAS). ALPA also argues that under § 91.7, UAS operators must demonstrate their airworthiness to the same extent as operators of other aircraft.

ALPA also notes that the petitioner's proposed operations are for "compensation or hire," and argues 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, as well as specific and adequate training on the UAS make and model intended to be used. Similarly, ALPA asserts a current second-class airman medical certificate should be required. NAAA also commented on pilot qualification, stating—

> Just as manned aircraft pilots are required to undergo a rigorous training curriculum and show that they are fit to operate a commercial aircraft, so too must UAS operators. Holding a commercial certificate holds UAS

> 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 knowledge and training required by holders of both private and commercial certificates. Additional details are available in the ensuing analysis of this issue with regards to 14 CFR § 61.113.

ALPA opposes an exemption from the pre-flight action requirements of § 91.103. In addition, although the petitioner did not request an exemption from § 91.113, ALPA notes the petitioner must specify a means to meet see and avoid requirements in § 91.113 given the absence of an onboard pilot. This comment is addressed in detail in the FAA analysis below.

ALPA mentioned the aircraft will not have a barometric altimeter as required by 14 CFR § 91.121, stating the ability to accurately maintain altitude must be addressed, and processes or mitigations, such as redundant control capability, fail-safe systems, backups and specific, validated procedures for system and equipment failures must be in place. The FAA agrees with ALPA and addresses this concern in its analysis of the exemption from 14 CFR § 91.121, finding that the alternative means of compliance proposed by the petitioner does not adversely affect safety.

Regarding the fuel requirements of § 91.151, ALPA argues that using batteries as the only source of an aircraft's power is a substantial shift from traditional methods of propulsion, and requires further research to determine best safety practices. This comment is addressed in detail below.

ALPA expresses concern on whether the petitioner's UAS can comply with the aircraft light requirements for night operations in § 91.209, given its limited electric power. The petitioner indicates that night operations will not be conducted and this exemption limits operations to daytime only.

Regarding §§ 91.405(a), 91.407(a)(1), 91.409(a)(2), and 91.417(a) and (b), ALPA opposes the petitioner's attempt to avoid compliance with established aircraft maintenance and recordkeeping requirements. ALPA states the UAS should comply with the same level of safety as other aircraft operated commercially in the NAS. This comment is addressed in detail below.

ALPA also expresses concern that the petitioner's waiver request is not for a single specific operation or location, but for all operations of the same general type. ALPA states this results in a considerable increase in the FAA's oversight tasks. The FAA notes ALPAs concern and in order to minimize potential impact to the NAS, the FAA requires each operator secure a Certificate of Authorization or COA which covers specific details of the petitioners operation. The FAA recognizes that UAS integration will generate new NAS access demand and will review and adjust accordingly.

NAAA states it represents the interests of small business owners and pilots licensed as commercial applicators. NAAA explains that 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 for 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. NAAA argues that until adequate see-and-avoid technology is developed, the FAA should require UAS operators to post a Notice to Airmen (NOTAM) 48 to 72 hours before operations. NAAA proposes UAS aircraft be painted a highly visible color, be equipped with strobe lights, and use Automatic Dependent Surveillance–Broadcast (ADS–B) or other similar location reporting technology. To address these concerns the FAA has incorporated associated conditions and limitations into this exemption, including: a) NOTAMs issued for all operations, b) operations conducted within VLOS of the PIC and the VO, and c) the UAS PIC must always yield right-of-way to manned aircraft.

NAAA also proposes a number of operating limitations and requirements for UAS operators. NAAA states UAS operators should have procedures to immediately ground the UAS if another low-flying aircraft is within 2 miles; be attentive and free from distractions; comply with all applicable regulations, policies, and procedures; be equipped with aviation radios set to a locally defined frequency; have a separate VO with a second-class medical certificate and perform duties for only one UAS at a time; maintain line-of-sight operations; and be well-versed in the UAS operator document. NAAA further states UAS should be properly maintained, have a registered N-Number on an indestructible and unmovable plate, and be required to have an airworthiness certificate and liability insurance. These comments are addressed in the FAA's analysis and conditions and limitations.

The other commenter opposing the petition states it appears the petitioner has copied documentation from current exemptions, which raises suspicions about the petitioner's actual qualifications and operational abilities. The commenter also states additional information provided by the petitioner does not serve the public interest nor specify the level of expertise and skills required to operate a drone safely on a closed set. The commenter further states it is in the public interest that each applicant undergo identical scrutiny of its qualifications and safety standards. The commenter urges the FAA to delay granting additional exemptions pending real-world operational data from the current group of exempted operators.

The petitioner responded to this comment noting that its additional information submitted on October 3, 2014, shows Team 5's members are experienced and highly regarded pilots and camera operators and have performed aerial coordination and filming work on hundreds of major motion pictures and television shows and commercials. The petitioner states its chief UAS and training pilot is a certificated airline transport pilot for turbine rotor-wing aircraft and multiengine jet aircraft. The petitioner adds the chief UAS pilot has extensive experience operating and building radio-controlled (RC) aircraft for over 20 years and has competed professionally in pylon racing and 3D aerobatic demonstrations.

The petitioner notes the commenter is unaware of the comprehensive proprietary UAS operational documents submitted by the petitioner to the FAA under separate cover. The petitioner states these confidential documents are based on the intended operations, FAA guidance on UAS operations, the petitioner's experience in the entertainment industry, and the Astraeus Aerial grant of exemption (Exemption No. 11062).

The FAA notes that the nature of this exemption process requires an individual review of the petitions received, including proprietary materials submitted to the agency. It has reviewed this petition and, as discussed below, finds that it is in the public interest and operations would pose no adverse impact on safety.

Concerns raised in this comment section are addressed in the FAA's analysis below and 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

In accordance with the statutory criteria provided in section 333 of Public Law 112−95 in reference to section 44704 of Title 49, United States Code (49 U.S.C.), and in consideration of the size, weight, speed, and limited operating area associated with the aircraft and its operation, the Secretary of Transportation has determined that this aircraft meets the conditions of section 333. Therefore, the FAA finds that relief from 14 CFR part 21, and any associated noise certification and testing requirements of part 36, is not necessary.

Commercial motion picture and television aerial filming operations with manned aircraft are typically conducted with aircraft holding standard airworthiness certificates issued under part 21, subpart H. These aircraft are normally modified via the Supplemental Type Certificate (STC) process to install cameras and other equipment not included in the original aircraft design.

Manned helicopters conducting aerial filming can weigh 6,000 pounds or more and are operated by an onboard pilot, in addition to other onboard crewmembers, as necessary. The petitioner's UAs will weigh less than 55 pounds 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 because of a fuel spillage is eliminated.

During motion picture and television aerial filming 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. In these situations, the filming subject and production personnel are exposed to risk by virtue of their close proximity to an aircraft in flight. Compared to manned aircraft, the UA being operated by the petitioner reduces the risk to participating persons 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 standoff distance from clouds, permitting daytime operations only, and requiring that the UA be operated within VLOS and yield right-of-way to all other manned operations. Additionally, the exemption provides that the operator will request a NOTAM prior to operations to alert other users of the NAS. These mitigations address concerns raised by NAAA and ALPA regarding awareness of UAS operations occurring in the airspace.

The petitioner's UAS has the capability to operate safely after experiencing certain in-flight failures. The UAS is also able to respond to a lost-link event with a pre-coordinated, predictable, automated flight maneuver. These safety features provide an equivalent level of safety compared to a manned aircraft performing a similar operation and address ALPAs comment on mitigating risk of command and control link failures. These additional safety features have no adverse effect to participating and nonparticipating individuals compared to a manned aircraft that holds a standard airworthiness certificate performing a similar operation.

The petitioner requests relief from 14 CFR §§ 91.405 (a) *Maintenance required*, 91.407(a)(1) O*peration 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 and post flight 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.

UAS Pilot In Command (PIC)

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 its UAS with an FAA private airman certificate pilot in lieu of an FAA commercially certificated airman. Although Section 333 provides limited statutory flexibility relative to 49 USC § 44704 for the purposes of airworthiness certification, it does not provide flexibility relative to other sections

of title 49. The FAA does not possess the authority to exempt from the statutory requirement to hold an airman certificate, as prescribed in 49 USC § 44711. For further information see Exemption No. 11110 (Trimble Navigation, Ltd).

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

Given these grounds, the FAA must determine the appropriate level of pilot certification for the petitioner's proposed operation.

Under 14 CFR part 61, civil operations for compensation or hire require a PIC holding a commercial pilot certificate. Based on the limitations 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 (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 FAA has analyzed the petitioner's proposed operation and has determined that it does not differ significantly from the situation described in Grant of Exemption No. 11062 to Astraeus. The petitioner plans to operate over private property with controlled access in the NAS. 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 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 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 (item #3 stated above), the petitioner has proposed a minimum of 200 flight cycles and 25 hours of total time as a UAS rotorcraft pilot and at least 10 hours logged as a UAS pilot with a similar UAS type (single blade or multi-rotor). The conditions and limitations below stipulate that petitioner may not permit any PIC to operate unless that PIC has demonstrated through petitioner's training and currency requirements 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.

Some of the petitioner's PIC requirements are provided in its proprietary documents. However, as with other exemptions that contain specific pilot qualifications, e.g. Exemption Nos. 7830, 6802K, and 6540N, those pilot requirements become conditions and limitations within the grant of exemption. An abbreviated summary of those PIC requirements include the following:

a. The PIC must possess a private pilot's certificate and a valid third-class medical certificate;

b. The PIC must have accumulated and logged a minimum of 200 flight cycles and 25 hours of total time as a UAS rotorcraft pilot and at least 10 hours logged as a UAS pilot with a similar UAS type (single blade or multi-rotor).

c. The PIC must have accumulated and logged a minimum of five hours as UAS pilot with the make and model of UAS to be utilized for operations under the exemption and three take-offs and landings in the preceding 90 days.

d. The PIC must have successfully completed the qualification process as specified in petitioner's operating documents.

In conclusion, the FAA finds that a PIC holding a private pilot certificate and a third-class airman medical certificate, and who has completed petitioner's UAS training and currency 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 subject to the conditions and limitations listed below.

The petitioner has also indicated all flights will be operated within visual line of sight of the PIC and/or observer or VO. 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 visual line of sight (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.

The FAA considers the PIC to be designated for the duration of the flight. Therefore, per the conditions and limitations below, the PIC must be designated before the flight and cannot transfer his or her designation for the duration of the flight.

<u>UAS Operating Parameters</u>

Although the petitioner did not seek relief from 14 CFR § 91.7(a) *Civil aircraft airworthiness,* 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. 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.

In accordance with 14 CFR § 91.7(b) *Civil Aircraft Airworthiness*, the PIC of the UAS is responsible for determining whether the aircraft is in a condition for safe flight. Although the petitioner did not seek relief from § 91.7(b) in its petition, the FAA, as in grant of Exemption No. 11062 to Astraeus, has determined that the operating documents include procedures to be used prior to each flight that can ensure compliance with § 91.7(b). Therefore, relief from § 91.7(b) is not necessary. The petitioner is still required to ensure that its aircraft is in a condition for safe flight – based on compliance with the operating documents– prior to every flight.

Regarding the petitioner's requested relief from § 91.103 *Preflight Action*, although there will be no approved Airplane or Rotorcraft Flight Manual as specified in paragraph (b)(1), the FAA believes the petitioner can comply with the other applicable requirements in § 91.103(b)(2). The procedures outlined in the petitioner's 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 and to preclude the UA from operating in the NAS. The FAA also notes the risks associated with sun glare; the FAA believes the that 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 their preflight procedures. Therefore, the FAA finds that exemption for 14 CFR § 91.103 is not necessary.

Regarding the petitioner's request for relief from 14 CFR § 91.119(c), the FAA finds that this is consistent with the relief typically provided to manned operations in FAA Order 8900.1 V3, C8, S1. This Order allows for relief from § 91.119(c) with respect to those participating persons, vehicles, and structures directly involved in the performance of the actual filming. Consistent with FAA Order 8900.1 V3, C8, S1, persons other than participating persons[2] are not allowed within 500 feet of the operating area. This provision may be reduced to no less than 200 feet if an equivalent level of safety can be achieved and the Administrator has approved it. For example, an equivalent level of safety may be determined through evaluation by an aviation safety inspector of the filming production area to note terrain features, obstructions, buildings, etc. Such barriers may protect nonparticipating persons (observers, the public, news media, etc.) from debris in the event of an accident. The stand-off distances above are applicable to all UA operations, including takeoff, flight, and landing of the UA.

The FAA notes the petitioner's additional guidelines in its MPTOM to protect its participating production personnel, and finds that relief from 14 CFR § 91.119(c) is warranted, provided

[2] Per Order 8900.1 V3, C8, S1, participating persons are all persons associated with the filming production, and they must be briefed on the potential risk of the proposed flight operation(s) and must acknowledge and accept those risks. Nonparticipating persons are the public, spectators, media, etc., not associated with the filming production.

adherence to the procedures outlined in the petitioner's MPTOM and FOPM, and the FAA's additional conditions and limitations outlined below. However, all nonparticipating personnel will be required to be at least 500 feet from flight operations, with possible relief to allow reductions to 200 feet, as specified above.

The petition refers to proposed operations 200 feet above a platform of unspecified and therefore unlimited height. This could put the aircraft at the same altitude strata as other aircraft in the NAS, with only geographic separation to mitigate the risk of collision. Therefore, the FAA has determined that operations from elevated platforms are not permitted as stated in the conditions and limitations.

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 14 CFR § 91.151(a) *Fuel requirements for flight in VFR conditions*, relief has been granted for manned aircraft to operate at less than the minimums prescribed in § 91.151(a), 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 FAA agrees with petitioner's proposal to limit UAS flights to not more than 30 minutes, or enough battery reserve to ensure that the UAS lands at the ground station with at least 25% battery power reserve, whichever occurs first. Given the limitations on its proposed operations, the FAA finds sufficient reason to grant the relief from § 91.151(a) as requested in accordance with the conditions and limitations outlined below.

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 a 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:

Relief considered (14 CFR)	**FAA determination (14 CFR)**
61.113(a) and (b)	Relief granted with conditions and limitations
91.7(a)	Relief granted from 91.7(a), with conditions and limitations
91.103	Relief not necessary
91.119(c)	Relief granted with conditions and limitations
91.121	Relief granted with conditions and limitations
91.151(a)	Relief granted from 91.151(a)(1), day, with conditions and limitations
91.405(a)	Relief granted with conditions and limitations
91.407(a)(1)	Relief granted with conditions and limitations
91.409(a)(2)	Relief granted with conditions and limitations; relief from 91.409(a)(1) also 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, Team 5, LLC is granted an exemption from §§ 61.113(a) and (b); 91.7(a); 91.119(c); 91.121; 91.151(a); 91.405(a); 91.407(a)(1); 91.409(a)(1) and (a)(2); and 91.417(a) and (b) to the extent necessary to allow Team 5 to operate UAS for the purpose of aerial filming in the motion picture and television industry. This exemption is subject to the conditions and limitations listed below.

Conditions and Limitations

Relative to this grant of exemption, Team 5 is hereafter referred to as the operator.

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

1) Team 5 Flight Operations and Procedures Manual (FOPM),
2) Team 5 Motion Picture and Television Operations Manual (MPTOM), and
3) Additional supplemental documents submitted by petitioner

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 unmanned aircraft (UA): 1) Gryphon Dynamics X8 SN#001, a co-axial quad copter with eight rotors and motors, and, 2) the DJI S1000, octocopter with eight rotors and motors. Each weighs less than 55 pounds. Proposed operations of any other UAS 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 of aerial filming in the motion picture and television industry.

3. The UA may not be flown at a ground speed exceeding 50 knots.

4. 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 medical certificate.

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

10. The pre-flight inspection must account for all discrepancies, e.g. inoperable components, items, or equipment, not already covered in the relevant sections of the operating documents.

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

12. The operator must carry out its maintenance, inspections, and record keeping requirements, in accordance with the operating documents. Maintenance, inspection, and alterations 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.

13. Each UAS operated under this exemption must comply with all manufacturer Safety Bulletins.

14. The authorized person must make an entry in the aircraft record of the corrective action taken against discrepancies discovered between inspections.

15. The PIC must possess at least a private airman certificate and at least a third-class airman 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.

16. 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 and currency 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.

17. 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.

18. 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.

19. 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.

20. If the UAS 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.

21. The PIC must abort the flight in the event of unpredicted obstacles or emergencies in accordance with the operating documents.

22. 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 25% battery power remaining.

23. 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.

24. The UA may not be operated from an elevated platform.

25. 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.

26. 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.

27. 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.

28. At least three days before scheduled filming, the operator of the UAS affected by this exemption must submit a written Plan of Activities to the local 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 filming production 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 filming production event;

    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.

29. The UA must remain clear and yield the right of way to 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. Regarding the distance from participating persons, the operating documents have safety procedures for UA operations to be conducted closer than 500 feet to authorized and consenting production personnel. At all times, operations must not present an undue hazard

to those participating persons per § 91.119(a).

33. Regarding distance from nonparticipating persons, the operator must ensure no persons are allowed within the perimeter of 500 feet from the area of primary filming except those consenting to be involved and necessary for the filming production. This provision may be reduced to no less than 200 feet if it would not adversely affect safety and the Administrator has approved it. For example, an equivalent level of safety may be determined by an aviation safety inspector's evaluation of the filming production area to note terrain features, obstructions, buildings, safety barriers, etc. Such barriers may protect nonparticipating persons (observers, the public, news media, etc.) from debris in the event of an accident. This is also consistent with the same FAA Order 8900.1, V3, C8, S1.

34. 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.

35. 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.

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 29, 2015.

/s/
John Barbagallo
Acting Deputy Director, Flight Standards Service